First 10 Gb/s 1310 nm VCSEL

After in late 2000 announcing the world's first high-power commercial 2.5 Gb/s (OC-48) long-wavelength 1310 nm VCSEL (which is now currently ramping up to production), Nova Crystals Inc (San Jose, CA, USA) has demonstrated the first commercial 1310 nm VCSEL source for 10 Gb/s (OC-192) metro, access and LAN networks.

Preliminary devices deliver 7 mW of power, exhibiting single spatial mode and a single polarisation state output.

Nova Crystal's VCSELs allow "numerous functional components, such as modulators and power amplifiers, to be integrated monolithically on a single chip," notes Chief Technical Officer Yu-Hwa Lo. "As we move towards manufacturing the device, we will continue to refine its operating characteristics, such as its spectral linewidth, temperature sensitivity, and extinction ratio."

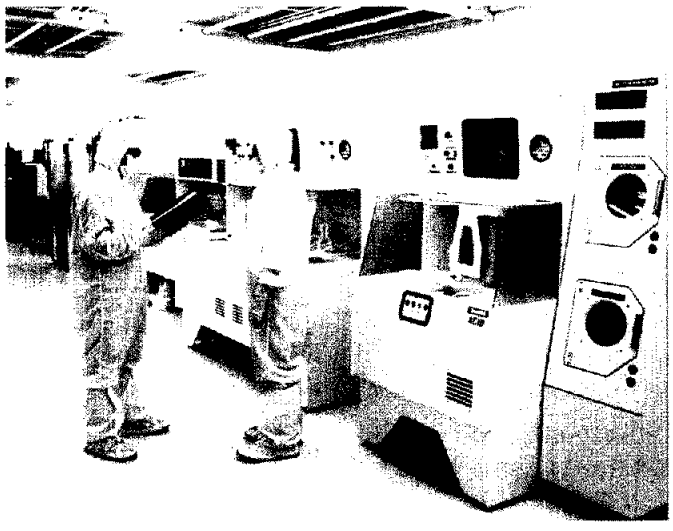
Sampling with customers will begin in Q3/2001.

CEO Felix Ejeckam says that 10 Gb/s performance enables long-wavelength VCSELs to successfully penetrate much further into the optical network, and, ultimately, replace distributed feedback (DFB) lasers in long-haul applications.

"We expect a similar adoption of 10 Gb/s speeds to take place in the metro market, both for SONET/SDH interfaces, and for 10 Gb/s Ethernet applications", adds John Lively, Director Optical Components Research at telecoms analysts RHK.

"The 1310 nm VCSEL promises to change the datacoms market by increasing the reach of 10 Gb/s modules to ranges previously served only by discrete 1310 nm Fabry-Perot lasers and well beyond the range of 850 nm VCSELs," confirms Strategies Unlimited Inc president John Day.

* Nova has acquired a 40,000 ft^2 building in San Jose (currently being customised), including about US$10m in production equipment and a team of a dozen engineers. The new facility will expand floor-space five-fold for production of long-wavelength VCSELs.



Pictured: The lithography area of the cleanroom at Nova Crystal's new VCSEL manufacturing facility.

First multi-band transmission in the S- and C-bands

After raising US$110m in 2nd. round funding in January, Xtera Communications Inc (Allen, TX, USA) has used discrete Raman technology to demonstrate the first multi-band transmission in the S-band (1485-1525 nm) and C-band (1530-1565 nm), operating over five spans of 25 dB on more than 450 km of fibre.

Its first product, the eXpander, uses the first commercial S-band 40-Channel Arrayed Waveguide Grating planar lightwave circuits (from Lightwave Microsystems, using its LightWeaver technology) and Raman components from Oplink Communications (the first commercial filter-based, crystal-based and fused-biconic-based components operating in the S-band, with an epoxy-free process enabling them to operate at high optical power). The eXpander can thus increase usable bandwidth by allowing fibre to carry an additional 96 channels of 10 Gb/s at 50 GHz spacing in the previously untapped S-band.

"This demonstration shows the interoperability of S-band traffic with C-band systems", says chief operating officer Carl DeWilde, allowing upgrades beyond initially deployed systems.

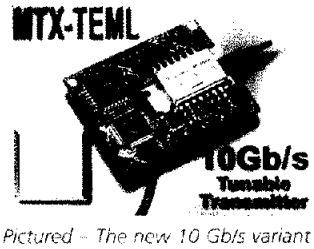
10 Gb/s tunable EA-modulated laser transmitters

After introducing the first 2.5 Gb/s tunable laser transmitter last March and the first 20-channel tunable laser module in September, **Agere Systems** (formerly the Microelectronics Group of Lucent Technologies), has launched the first 10 Gb/s tunable laser transmitter for both short- and long-haul DWDM optical networks (from metro to extended-reach systems up to 40 km).

The C92 (compatible with the C-48 family of cooled laser transmitters) combines a tunable laser and an electro-absorptive modulator monolithically integrated on a common silicon platform, along with a modulator driver, wavelength stabilizer, photodetector etc in a small-form-factor module package.

Built-in LambdaLock spectral stabilization "locks" emission to any of up to 20 adjacent 50 GHz channel spacings, providing wavelength stability better than 20 pm.

Production quantities are expected by Q4/2001.



Pictured – The new 10 Gb/s variant of Multiplex's MTX-TEML tunable Electro-absorption Modulated Laser.

Vertically integrated opto manufacturer **Multiplex Inc** (South Plainfield, NJ, USA) has demonstrated a 10 Gb/s variant of its MTX-TEML tunable transmitter (launched last September at the European Conference on Optical Communication in Germany). It is based on its MTX52EW 2.5Gb/s high-speed Electro-absorption Modulated Laser - the first to offer 16 channels (with switching time <10 ms) and electronic, quasi-continuous wavelength tuning (by injecting current into the phase and Bragg sections, rather than temperature tuning).

* Multiplex has appointed Robert J Ott to the position of Chief Financial Officer (ex-vp, Merger Integration & Business Development for Motorola's Broadband Communications Sector).